

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:**Claim 1. (Cancelled)****Claim 2. (Currently Amended)** A semiconductor package comprising:

a packaging substrate;

a semiconductor die having a top surface and a bottom surface having its bottom surface mounted on the substrate using solder balls;

a heatspreader mounted at the top surface of the package; and

a multi-layer heat transfer element arranged between the semiconductor die and the heat spreader to enable thermal communication between the die and the heat spreader wherein the multi-layer heat transfer element includes:

a core spacer plate having a top surface and a bottom surface wherein the core spacer is arranged solely between the die and the heatspreader;

a first layer of thermally conductive reflowable material formed on the top surface of the core and directly above the die configured to attach the core to the heatspreader, wherein the reflowable materials comprises a solder from the group consisting of silver containing solders, tin containing solders, lead containing solders, silicon titanium containing solders, tin silver containing solders, and tin bismuth containing solders; and

a second layer of thermally conductive reflowable material formed on the bottom surface of the core to attach the core to the top surface of the die, wherein the reflowable materials comprises a solder ~~from the group consisting of silver containing solders, tin containing solders, lead containing solders, silicon titanium containing solders, tin silver containing solders, and tin bismuth containing solders~~ selected from the group consisting of silver containing solders, tin containing solders, lead containing solders, silicon titanium containing solders, tin silver containing solders, and tin bismuth containing solders.

Claim 3. (Original) The package of Claim 2 wherein the die is attached to the second layer by a reflow process and wherein the heat spreader is attached to the first layer by the reflow process.

Claim 4. (Previously Presented) The package of Claim 2 wherein the core spacer plate is comprised of conducting materials.

Claim 5. (Previously Presented) The package of Claim 2 wherein the core spacer plate is comprised of metal.

Claim 6. (Previously Presented) The package of Claim 2 wherein the core spacer plate is comprised of layers of metal.

Claim 7. (Currently Amended) The package of Claim 2 wherein the core spacer plate includes vias that penetrate through the core spacer plate element.

Claim 8. (Previously Presented) The package of Claim 2 wherein the core spacer plate includes dimples formed therein.

Claim 9. (Previously Presented) The package of Claim 2 wherein the core spacer plate is comprised of a conducting resin material.

Claim 10. (Cancelled)

Claim 11. (Previously Presented) The package of Claim 2 wherein the semiconductor die is mounted to the packaging substrate using a plurality of solder bumps;
wherein the packaging substrate includes a stiffener element that is mounted between the heat spreader and the substrate.

Claim 12. (Original) The package of Claim 2 wherein the first layer is formed of a solder material that has good adhesion to a material comprising a surface of the heat spreader; and
wherein the second layer is formed of a solder material that has good adhesion to a material comprising a top surface of the die.

Claim 13. (Previously Presented) The package of Claim 2 wherein the core spacer plate comprises a thermally non-conductive material and wherein the core spacer plate includes a plurality of vias that penetrate through the core spacer plate;

wherein reflowable material of at least one of the first layer and the second layer fills at least a portion of the vias so that said first layer and the second layer are in physical contact with each other, thereby establishing thermal communication between the die and the heat spreader.

Claim 14. (Original) The package of Claim 2 wherein a backside of the packaging substrate has a plurality of solder balls configured for attaching and electrically connecting the package with a circuit board; and

wherein a reflow process is used to attach the heat spreader to the first layer, to attach the second layer to the die, and to attach the solder balls of the substrate to the circuit board.

Claims 15-29. (Cancelled)

Claim 30. (Previously Presented) The package of Claim 2 wherein the multi-layer heat transfer element is between about 15 microns to about 250 microns thick.

Claim 31. (Previously Presented) The package of Claim 30 wherein the first layer of thermally conductive reflowable material is between about 1 micron to about 10 microns thick; and

wherein the second layer of thermally conductive reflowable material is between about 1 micron to about 10 microns thick.

Claim 32. (Previously Presented) The package of Claim 30 wherein the multi-layer heat transfer element is less than about 30 microns thick.

Claims 33-35. (Cancelled)

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